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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/848,932	05/04/2001	Paul Hoffman	M-9954 US	7101

24251 7590 10/11/2002

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SAN JOSE, CA 95110

EXAMINER
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CRUZ, LOURDES C

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 10/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

12

<b>Office Action Summary</b>	Application No. 09/848,932	Applicant(s) HOFFMAN ET AL.	
	Examiner Lourdes C. Cruz	Art Unit 2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 July 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                    | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                           | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2,3</u> . | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

Applicant's election without traverse of device claims in Paper No. 8 is acknowledged.

#### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 11. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The figures showing a cross-sectional view of the invention are improperly crosshatched. All of the cross hatching patterns should be selected from those shown on page 600-81 of the MPEP based on the material of the part. Also see 35 CFR 184 (h)(3) and MPEP 608.02.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 11-16, 18-24,26-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Tang et al. (US 6246115).

Tang et al. discloses a semiconductor chip package (See Fig. 2) comprising:

A substrate 30; a metallization layer 303 formed on one side of the substrate; a semiconductor die 31 mounted on the substrate, the die being electrically connected to a portion of the metallization layer (through 34); a shield element 32 mounted on the substrate, the shield element being electrically connected to a portion of the metallization layer; and a package mold 33 surrounding the die and shield element, encapsulating the shield element; wherein the metallization layer is not formed on one side (claim 29) of the substrate (see that no metallization layer is formed on the side adjacent to 303,304).

Tang et al. also discloses a chip package wherein:

- The metallization layer comprises a die pad (unlabeled, between 31a, 31b and connected to 34) on the substrate bond fingers (on vias 306) on the substrate; wherein the semiconductor die is attached to the die pad (by wires 34); and wherein the shield element is attached to at least one bond finger
- The package further comprises a bond wire 34 forming electrical connection between a bond pad (inherently present) on the die and one bond finger

- The shield element comprises a substantially planar top horizontal surface (opposite substrate); and a plurality of substantially planar vertical side surfaces (where 321a is) being joined to the top surface and to each other with rounded corners (see corners inside 32, above 321a); wherein the shield comprises openings 321a, 326 in top and side surfaces
- Legs 21 attached to bond fingers, the legs comprising a concave portion (see portion filled with encapsulate between 321 and structure on 303) and a convex (making contact with the structure) portion; also see that the bond fingers comprise an upper surface wherein an unlabeled structure is formed, and that this structure is shaped to receive the convex lower surface of the leg
- Solder balls 305 disposed on a side of the substrate opposite the metallization pattern and coupled to the pattern through the substrate

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25,31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al. in view of Hoffman (US5805427).

See that Tang et al. fails to disclose solder balls connected on a same side as the metallization pattern. However, see that Hoffman discloses solder balls being disposed on the same side as the metallization pattern 22,24. It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the one sided substrate of Hoffman to the invention of Tang et al. in order to avoid the formation of vias in the substrate.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al. in view of McCormick et al. (US 5909057).


See that although Tang et al. fails to specifically disclose the shield having a circular top surface, McCormick et al. shows (Fig. 4B) a heat spreader (which hasn't been structurally distinguished from the claimed shield) having such shaped top surface. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the round shield element of McCormick et al. to the teachings of Tang et al. for the purpose of providing the device with a curvilinear shield that will provide different arrangement of apertures with facilitated access to the die, as taught by McCormick et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lourdes C. Cruz whose telephone number is 703-306-5691. The examiner can normally be reached on M-F 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Lourdes C. Cruz  
Examiner  
Art Unit 2827

  
Lourdes Cruz  
September 30, 2002

  
ALBERT W. PALADINI  
PRIMARY EXAMINER